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| 10/542,609 | 07/18/2005 | Erwin Hoelle | 1957 0016 US | 7280 |

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| EXAMINER | |
|---|---|
| PRICE, CARL D | |

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| 3749 | |

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| 04/10/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/542,609 | HOELLE ET AL. | |
| | Examiner | Art Unit | |
| | CARL D. PRICE | 3749 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07/18/2005 (Preliminary Amendment)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *12-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/18/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement.*

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### *Drawings*

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "folding or corrugating" of the form ribs (Claim 16) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

> Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 24 recites the limitation "its upper". There is insufficient antecedent basis for this limitation in the claim.

## ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

## ***Claims: Rejected under 35 U.S.C. 102(b)***

Claims **12, 13, 15, 17** and **18**, are rejected under 35 U.S.C. 102() as being anticipated by **US 4240406 (Hutchison).**

**US 4240406 (Hutchison)** show and discloses a solar reflector collector module to focus the sun's rays onto a focal line, the module including:

- a support structure having a plurality of sickle shape form ribs (18) each having parabolic lateral edges;
- an outer skin (17, 21) surrounding said support structure such that said form ribs are clad in said outer skin; and
- a trough-shaped, arched reflector having a pliable reflector material (17A) disposed directly on an upper outer skin (17) and a shape defined by said parabolic lateral edges of said form ribs.

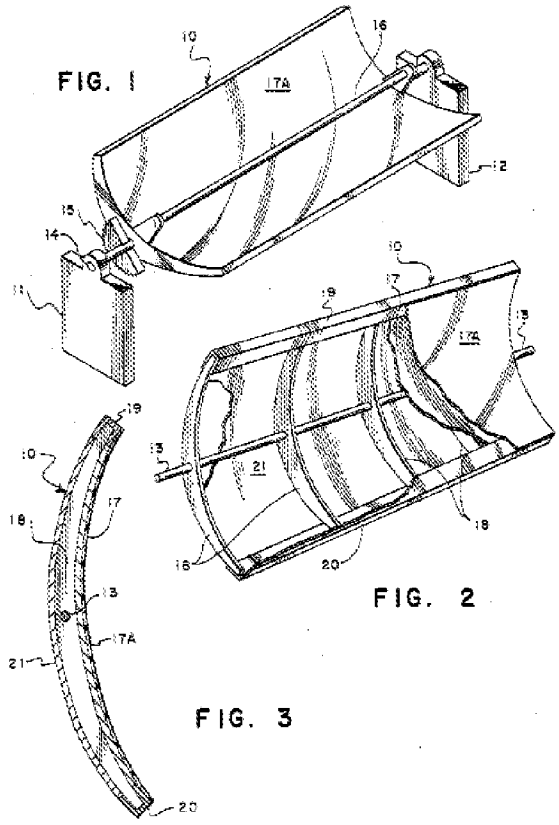
**US 4240406 Hutchison;**

3) Collector tube 16 is disposed along the line which is the focal point of the solar collector. **Reflective surface 17** is a **highly polished, mirror-like material** that will gather the incoming rays of the sun and will reflect them back to the focal point of the **parabola** which is occupied by **collector tube 16**. Suitable working fluids can be pumped through collector tube 16 to gather the solar energy in the form of sensible heat. Suitable means for pumping the working fluid through collector tube 16 are well known in the art and are not illustrate in FIG. 1.

(4) In the **monocoque** construction of the solar collector panel of this invention, rigid **bulkhead means 18** are made from a suitable material such as aluminum, magnesium alloy, steel and the like. The rigid bulkhead means are preferably made from cast material with the front or **concave surfaces** of the bulkhead being **precision cast or machined** to a close tolerance to form a **substantially true parabolic shape**. It will be appreciated that each of the separate bulkhead means 18 should be machined or cast to produce a front or concave surface that is substantially identical to all of the other bulkhead means in the construction. By using cast metallic bulkhead means that exhibit precision concave surfaces, **superior results can be obtained by constructing the solar collector panel in accordance with this invention.**

(8) Once the basic framework of the solar collector panel is **completed, a suitable metallic skin can be applied over the front and back portions of the framework**. In the construction of the solar panels of this invention, the **sheet metal skin** that is **applied over the front and back portions of the framework** is a **stressed skin** whereby any forces exerted on the structure will be uniformly distributed, without concentration, over the entire structure. The joinder between the edges of the stressed skin and the edges of extruded edge formers 19 and 20 should be of a suitable construction as to provide a joint which will transfer the stresses of the stressed skin to the extruded edge formers and vice versa. **Such seams and joinders are well known in the art of monocoque construction.**

(13) The end view of solar collector panel 10 shown in FIG. 3 illustrates one preferred method for fabricating the panels. In FIG. 3, bulkhead 18 is cast and the concave face of the bulkhead member is machined to **a true parabolic shape**. Extruded edge formers 19 and 20 are fitted over the ends of bulkhead 18 and thereafter **front stressed skin 17**, which can serve as the reflector surface when polished, is applied to the concave surface of the bulkheads. As shown in FIGS. 2 and 3, however, a **reflective surface 17A** is **applied over the front surface of stressed metal skin 17**. Stressed skin 21 is applied to the back side of the bulkhead. The thickness of the front concave edge of edge formers 19 and 20 will be substantially the same thickness as stressed skin 17 in order to form the continuous and uniform parabolic shape desired to maximum operating efficiency. Any suitable means for applying stressed skins 17 and 21 to the bulkheads can be utilized. Thus, **rivets, screws, adhesives and the like**, can be utilized for **affixing stressed skins 17 and 21** to the bulkhead sections.




## *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

## ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

## Claims rejected under 35 U.S.C. 103(a)

Claims **14, 16** and **19-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **US 4240406 (Hutchison)** in view of **US 4435043 (Mertens et al),** and alternatively **US 4435043 (Mertens et al)** in view of **US 4240406 (Hutchison).**

**US 4240406 (Hutchison)** shows and discloses the invention substantially as set forth in the claims with possible exception to:

- a trapezoidal metal sheet disposed between said reflector material and said outer skin to seat on said parabolic lateral edges of said form ribs, said metal sheet having longitudinal grooves running along said trough- shaped reflector, wherein said reflector material seats on said metal sheet.

**US 4435043 (Mertens et al)** shows and discloses the invention substantially as set forth in the claims with possible exception to:

- a support structure having a plurality of sickle shape form ribs (18) each having parabolic lateral edges;
- an outer skin (17, 21) surrounding said support structure such that said form ribs are clad in said outer skin; and
- a trough-shaped, arched reflector having a pliable reflector material (17A) disposed directly on an upper outer skin (17) and a shape defined by said parabolic lateral edges of said form ribs.

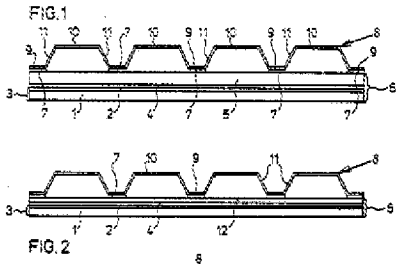
**US 4435043 (Mertens et al)** shows and discloses positioning a structural support element in the form of a trapezoidal corrugated metal sheet disposed between said reflector material and said outer skin to seat on said parabolic lateral edges of said form ribs.

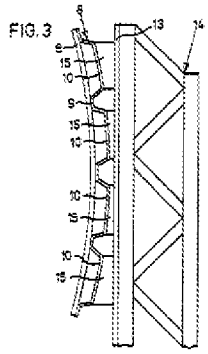
**US 4435043 (Mertens et al)** shows and discloses:

(2) In **FIG. 1**, a **front glass sheet 1** is provided in known manner with a **reflective coating 2**, for example of silver, to form a mirror 3. If desired, the back surface of the mirror 3 can be painted in known manner, though this is not shown. The reflectively coated face of the front glass sheet 1 is bonded by a glue layer 4 to a waterproof **backing sheet 5** (the **first backing sheet**) to form a **flexible laminate 6.** In the embodiment of FIG. 1, the first backing sheet 5 is a glass sheet which is thicker than the first glass sheet 1. The first backing sheet 5 is in turn glued by bodies of **adhesive 7** to **a corrugated backing sheet 8**. As indicated, the corrugations of the **corrugated backing sheet 8 are trapezoidal**, and the first backing sheet 5 is glued to front flat crests 9 of such corrugations which are all of substantially the same width and are narrower than the rear crests 10. The webs 11 joining the front and rear crests 9, 10 are non-reflexly angled to those crests.

(15) **The strength** of the said **second backing sheet** can readily be selected so that the composite mirror panel as a whole is substantially inflexible about axes normal to the corrugations, or it may be such as to admit of some degree of flexure about such axes if that is desired.

U.S. Patent Mar. 6, 1984 Sheet 1 of 2 4,435,043




(27) One especially preferred way of making such a **flexible laminate** is to constitute it as **a flexible radiant energy reflector** as described in published British Patent Application Specification No **GB 2 042 761** A whose disclosure is specifically incorporated into this specification by reference.

> (28) The corrugations of said **corrugated backing sheet may have any desired form**, for example they may be **rounded** or **sinusoidal** or of **rectangular** form, but it is **preferred that said corrugate**d backing sheet has **non-reflex trapezoidal corrugations.** Such corrugations provide **convenient flat crests or ridges** at either side of the sheet **for attachment to the first backing sheet** and **a mirror panel support**. The webs of the corrugated sheet joining such crests are non-reflexly, that is obtusely, angled to the crests to provide the best mechanical properties for the purposes in view.
>
> (29) Advantageously, each crest at either side of such a corrugated backing sheet has the same width which is different from the common width of the crests at the other side of the corrugated backing sheet, and said first backing sheet is bonded to the narrower crests.
>
> (30) The **two backing sheets may be bonded together** in any convenient way. It is to be noted however that such bonding techniques as spot-welding tend to provide localized stress concentrators which can deform the reflective surface when the composite mirror panel is flexed after assembly. Indeed, the mere act of spot-welding may itself deform the **first backing sheet** and thus also deform the reflective surface of an **adherent mirror**. In order to avoid or reduce this problem, **it is preferred** that said first backing sheet is **glued** to said **corrugated backing sheet**.
>
> (17) In another arrangement, the bar joists 24 are themselves curved and the mirror panels are attached between them to form a continuously concave reflector having a generally cylindrical or **parabolic-cylindrical** surface with a generally horizontal axis of curvature. In yet other arrangements, the beam 23 is bent so that reflected beams of sunlight from the two columns of mirror panels will intersect at a desired distance from the heliostat. And in a still further arrangement, the mirror panels in each column are concavely flexed about an axis parallel to the bar joists supporting that column.

In regard to claims **14, 16** and **19-26**, for the purpose of providing an alternative flexible composite mirror panel which had desirable and advantageous strength and flexure characteristics (e.g.- to the flexible composite mirror panel to be substantially inflexible about axes normal to the corrugations), it would have been obvious to a person having ordinary skill in the art to substitute a flexible composite reflector element of the type set forth in applicant's claims for the flexible reflector (17A) of **US 4240406 (Hutchison)**, in view of the teaching of **US 4435043 Mertens et al.**

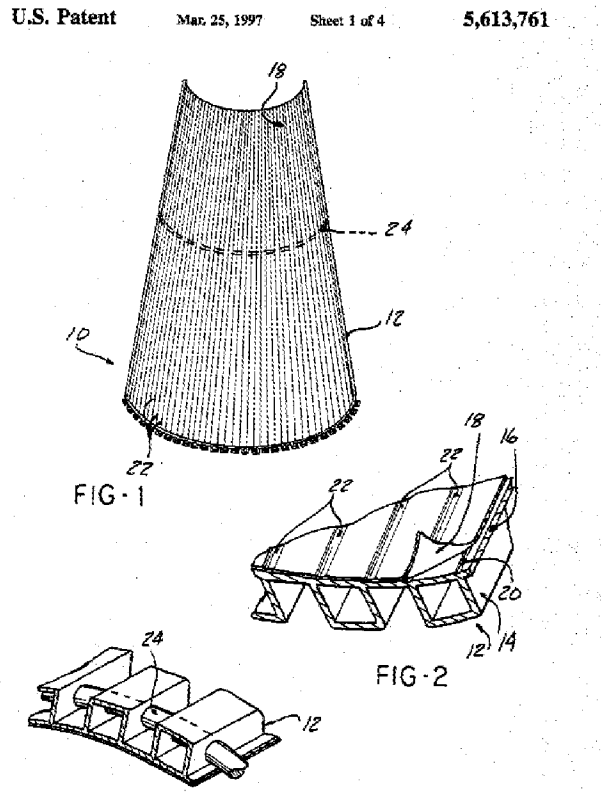
Alternatively, in regard to claims **14, 16** and **19-26,** for the purpose of providing a suitable alternative under or support structure for providing an accurate curved support profile for the flexible composite reflector (8; which itself includes a reflective surface supported by a corrugated backing sheet) of **US 4435043 (Mertens et al),** it would have been obvious to a person having ordinary skill in the art to substitute a support structure having a plurality of "sickle" shape form ribs clad in an outer skin for the **US 4435043 (Mertens et al)** support joist (14 ) and spacer piece (15) type truss construction, in view of the teaching of **US 4240406 (Hutchison)**.

In regard to claim **1**6, since the manner of attaching the reflective surface to the corner edge surface of each strut would necessarily depend on numerous inter-related design concerns such as the characteristics of the materials selected each element of the unit in addition to the overall size, weight and dimensions the reflector unit and its individual elements, to form the parabolic lateral edges of said form ribs by folding or corrugating the form ribs can be viewed as nothing more that merely matters of choice in design, absent the showing of any new or unexpected results produced therefrom over the prior art of record.

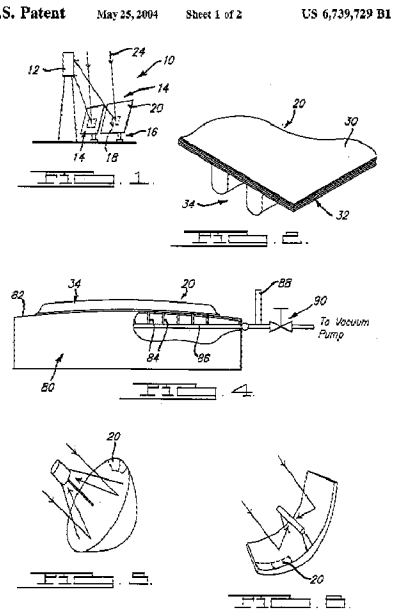
## ***Conclusion***

See the attached USPTO form 892 for prior art made of record and not relied upon which is considered pertinent to applicant's disclosure.

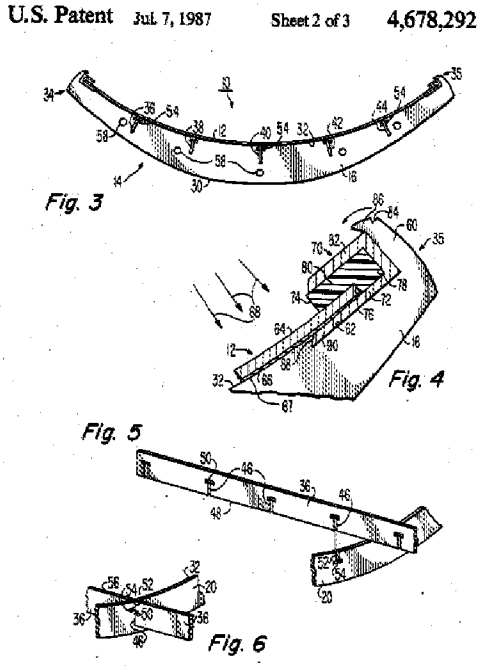
**US 5613761 (Raby et al):**



**US 6739729 B1 (Dean):**




**US 4678292( Miyatan et al):**



**US 4432343 Riise et al:**

(14) Between the two is a layer of adhesive 9. This adhesive expedites accurate, economical assembly and, while securely fastening elements 1 and 7 together, remains somewhat soft, thereby to accommodate displacement between the support and the reflector, to minimize distortion of the optical elements.

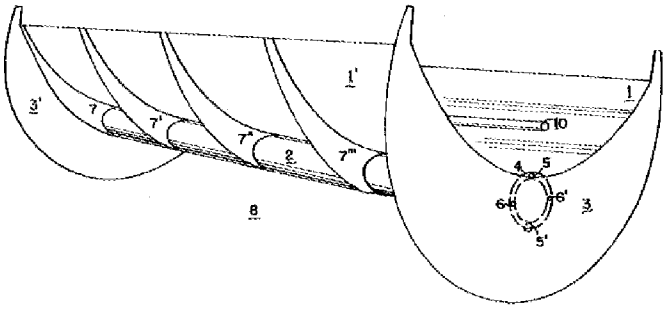
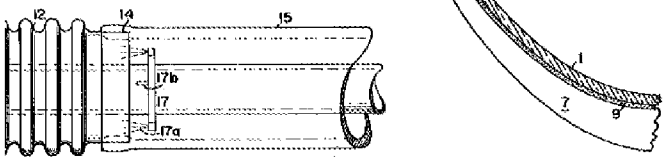


FIG. 2.



**US 4820033 Sick:**

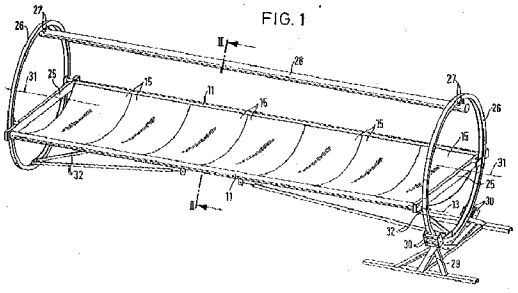


FIG. 1

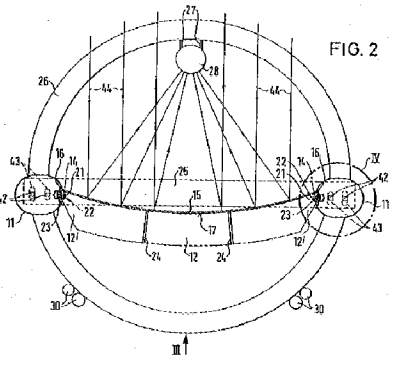
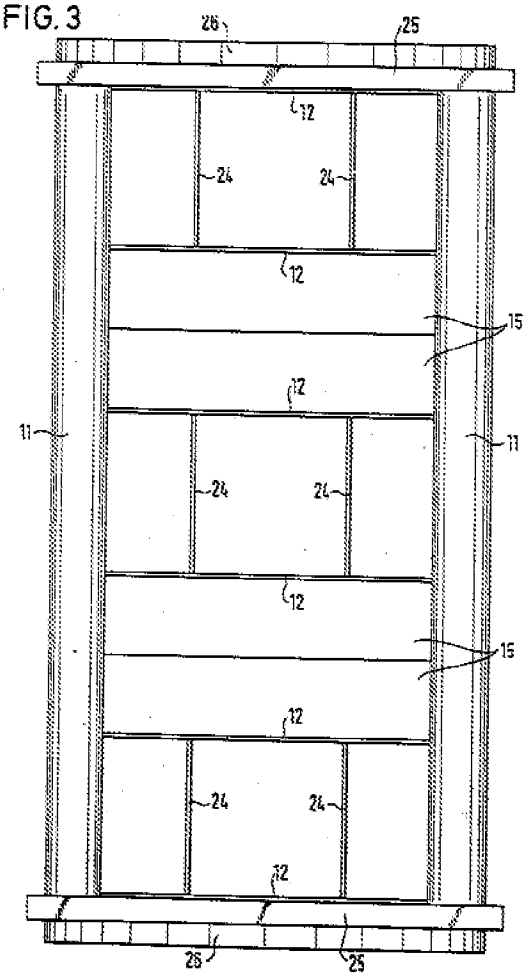


FIG. 2

U.S. Patent Apr. 11, 1989 Sheet 3 of 6 4,820,033

FIG. 3




**US 4135493 Kennedy :**

(2) Referring to FIGS. 1 and 2, there is shown a parabolic trough solar reflector 10 in accordance with the present invention. More particularly, the solar reflector includes an elongated rib support such as tube 11 which extends the length of the parabolic reflector. Support flanges 12 and 13 are secured to the ends of the support tube 11 and are adapted to receive the end ribs 14 and 16 which may be suitably attached to the flange by means of rivets or bolts. Disposed and spaced along the intermediate portion of the support tube 11 are a plurality of flanges 17, each of which is adapted to have secured thereto and extend outwardly therefrom intermediate ribs 18. Each of the ribs 14, 16 and 18 are identical in their construction and are made of thin sheet material, such as steel, with their end portions including a bent tab 19. The rib

bottom includes a bend edge portion or lip 21. The upper edges of the ribs each define a parabola. A thin sheet of reflecting material 22 is placed to contact the upper edges of the thin ribs. The sheet 22 has its ends bent at right angles to form a lip such as shown at 23. Retainers 24 are suitably secured to the tabs 19 by means of screws, bolts or other suitable attachments 26 whereby the retainers are urged against the confronting face of the lips 23 to force the sheet 22 into intimate contact with the adjacent upper edges of the ribs. This causes the sheet to contour to the parabolic edges of the ribs and define a reflecting trough surface. Because of the thinness of the adjacent edge of the ribs, the thin sheet is in intimate contact and will be so maintained as long as there is pressure from the retainers. It is advantageous but not necessary to provide a cover such as **the cover 27** which is suitably secured to lip portions 21 of the ribs by means of screws or bolts 28. **This protects the back surface of the reflecting sheet and the ribs against the environment.**



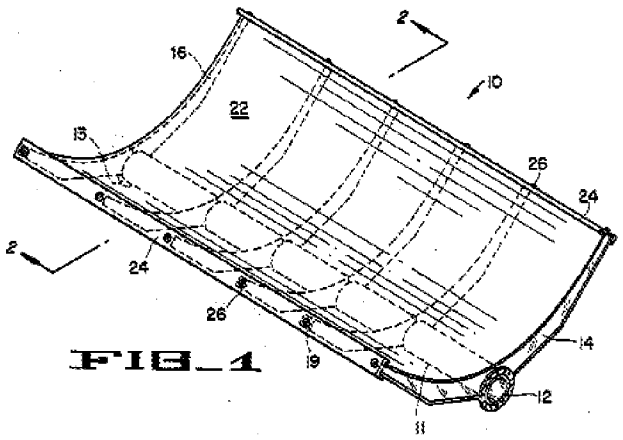



FIG_1

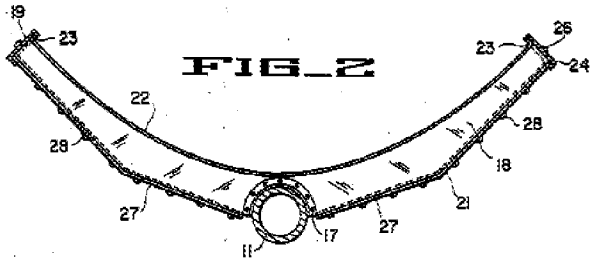



FIG_2

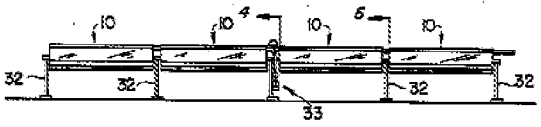



FIG_3

FIG. 1

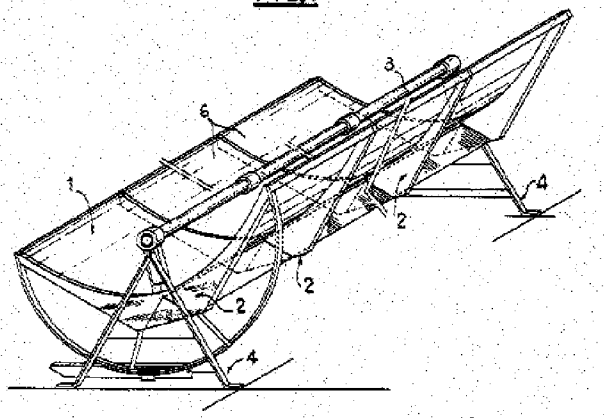



FIG. 8

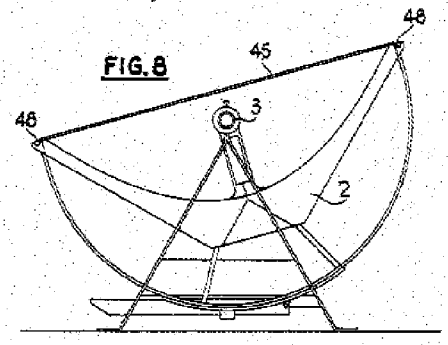
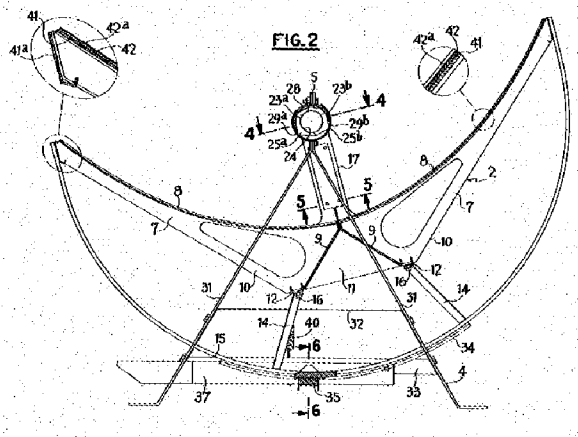



FIG. 2



**US 4077392 Garner:**

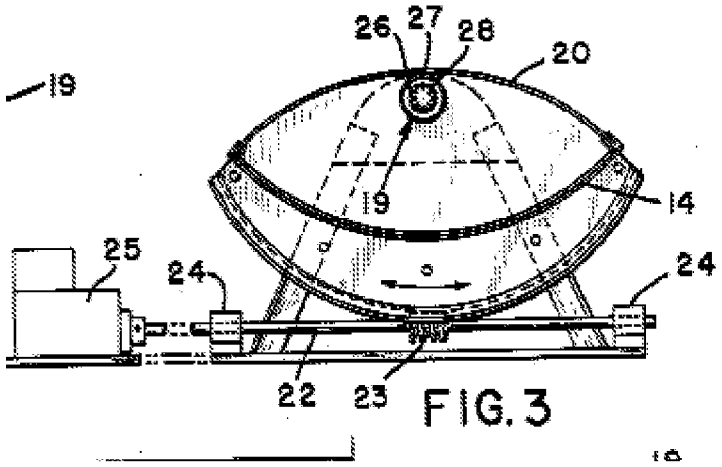



FIG. 3

**US 4268332 (Winders):**



FIG. 1

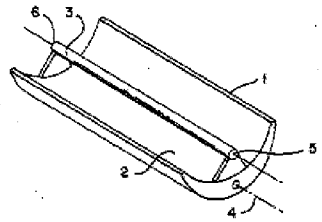


FIG. 2A

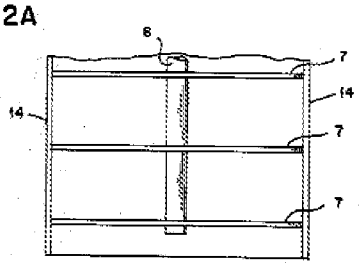


FIG. 2B

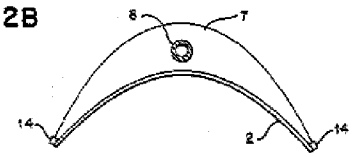
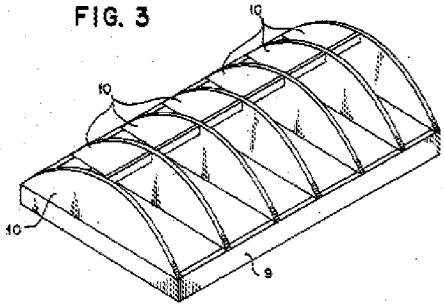


FIG. 3



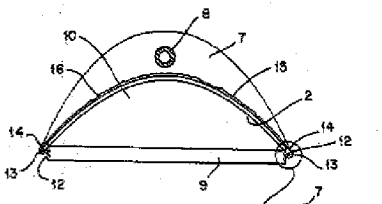
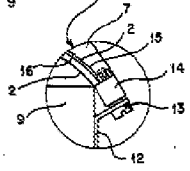


FIG. 4



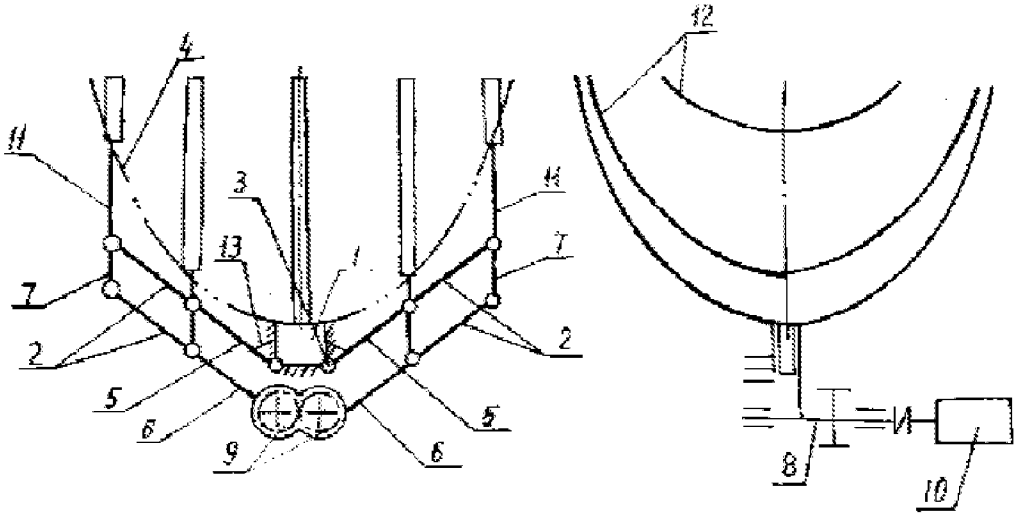
**RU 2050648 C1**

BASIC-ABSTRACT:
Appts. comprises central reflecting support panel (1), radial ribs (2), hinges (3), **flexible reflecting sheath (4),** carrier bars (5,6), stand (7), shaft (8), toothed transmission (9), motor (10), stems (11), **parabolic ribs (12)** and fixing elements (13).

Assembled vol. is minimised and precision coverage is obtained by two radial ribs being fixed to the central support panel.

When the **reflector** is being folded up, the motor is switched on and this moves bars (6) of ribs (2), causing the parallelogram mechanisms of the left and right halves of the reflector to take up new posns. with elements (6,5,12,4) in two planes. When the reflector is being opened, the process reverses. The rotation paraboloid has the equation x squared plus y squared equals 2az in the Cartesian system of co-ordinates, with a being a constant parameter.

USE/ADVANTAGE - Appts. concerns antenna science instruments esp. portable reflectors in form of paraboloids of rotation. Bul. 35/10.12.95



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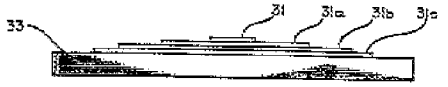



FIG. 6


FIG. 7

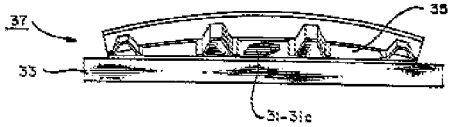
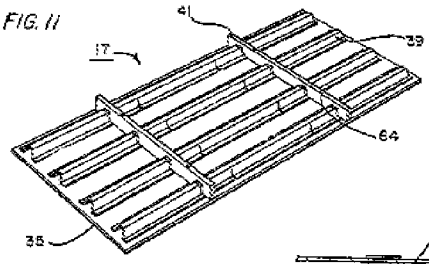



FIG. 8

FIG. 11



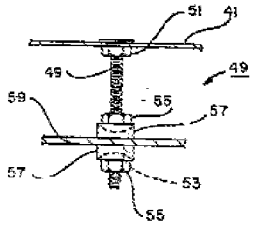




FIG. 12

FIG. 3

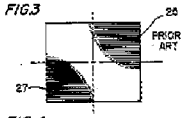



FIG. 4

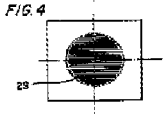



FIG. 9

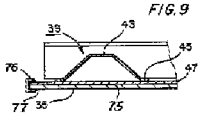
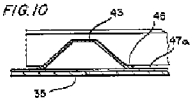



FIG. 10

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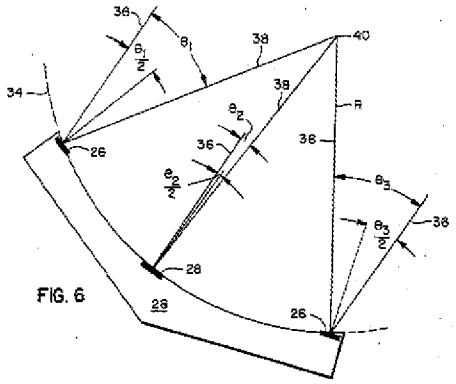


FIG. 6

## ***USPTO CUSTOMER CONTACT INFORMATION***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **CARL D. PRICE** whose telephone number is **(571) 272-4880**. The examiner can normally be reached on **Monday through Friday between 9:0am-5:30pm**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Steven B. McAllister** can be reached on **(571) 272-6785**. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/CARL D. PRICE/

Primary Examiner, Art Unit 3749